

Remarks/Arguments

The Final Office Action mailed June 8, 2009 has been reviewed and carefully considered.

Claims 2, 5 and 16 have been amended. Claims 2, 4, 5, 8, 11, 13, 14 and 16 are now pending in this application. No new matter has been added.

Reconsideration of the above-identified application, as herein amended and in view of the following remarks, is respectfully requested.

Rejections under 35 U.S.C. 103(a)

Claims 2, 4, 5, 8, 11, 13, 14, and 16 stand rejected under U.S.C. 103(a) as purportedly being unpatentable over U.S. Patent No. 4,052,029 to Townsend (hereinafter 'Townsend') in view of U.S. Patent No. 6,558,085 to Hall (hereinafter 'Hall').

Claim 16 of the present application recites:

A mine support comprising:

 a single deformable tubular sleeve with a circular cross section made from a ductile metal,

 a first aerated cementitious material with a first strength characteristic inside a first interior portion of the sleeve and filling said first interior portion of the sleeve; and

 a second aerated cementitious material with a second strength characteristic which differs from the first strength characteristic inside a remainder portion of the sleeve interior and filling said remainder portion of the sleeve interior;

 the first interior portion having a length, in an axial direction of the sleeve, which is greater than the length of the remainder portion of the sleeve interior in the axial direction of the sleeve and wherein, in use, one aerated cementitious material only overlies the other aerated cementitious material.

It is respectfully submitted that claim 16 is patentable over Townsend and/or Hall at least because the references do not disclose or render obvious employing "a single deformable tubular sleeve with a circular cross section made from a ductile metal." In particular, Townsend does not disclose or suggest the use of a single deformable sleeve. Rather, Townsend is directed to a mine support employing two separate sleeves to permit telescopic movement and slow adjustment of the mine support length (see, e.g. Townsend, FIGS. 1-7; column 2, lines 25-27). Indeed, Townsend relies on the "variable effective length" of the sleeves, which is due to the

telescopic adjustment, to “restrain expansion” of the wooden material within tubes 10 and 12 (Townsend, column 1, lines 46-50). For example, in the region where one tube overlaps the other, the circumferential strength of the material enclosing the timber is effectively doubled. In other regions, away from the overlapping portion, the strength of the circumferential retention force is attributable to the thickness of one tube only. Thus, the yield characteristic of the mine support of Townsend is affected by and entirely dependent on the degree of overlap between the two tubes. Accordingly, in view of Townsend, one of ordinary skill in the art would not employ a single deformable sleeve, as recited in claim 16, as a single tube would severely diminish the mine supports ability to restrain expansion of its filler material and slowly adjust its length in the event of a mine collapse. Furthermore, use of a single sleeve is not obvious, as it would completely preclude the telescopic effect taught in Townsend and would, in turn, subvert its entire principle of operation (see, e.g., MPEP §2143.01 (citing In re Ratti, 270 F.2d 810 (CCPA 1959) (“If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.”)).

Moreover, Hall fails to cure the deficiencies of Townsend, as Hall also fails to disclose or render obvious a single deformable tubular sleeve with a circular cross section made from a ductile metal. As illustrated in FIGS. 3 and 4 of Hall, Hall teaches the use of several tubes, for example, tubes 66, 68, 70 and 92, that are partitioned into respective arrays of compartments. Additionally, in Hall, the support and dividing walls are made from a flexible material that is entirely different from a ductile metal sleeve. For example, Hall teaches that the flexible material may a “suitable plastics material,” “paper” or “cardboard.” The purpose of the plastics material is therefore to only confine the filler. The material cannot, in itself, act as a containment structure which assists in determining yield characteristics, about which Townsend was especially concerned, in the same way as a ductile metal sleeve. Further, it should also be noted that there is no description of the cross-sectional shape of the compartments of the tubes.

Accordingly claim 16 is patentable over the cited references, at least because they fail to disclose or render obvious “a single deformable tubular sleeve with a circular cross section made from a ductile metal.” However, claim 16 is patentable over Townsend and Hall for other reasons as well.

For example, it is respectfully submitted that Townsend and/or Hall do not disclose or render obvious a mine support in which one aerated cementitious material only overlies another aerated cementitious material with different strength characteristics. As noted by the Examiner, Townsend does not disclose the use of differing cementitious materials. Rather, Townsend discloses the use of two identical timber materials with an optional spacer made of polyurethane or timber (see, e.g., Townsend, column 2, lines 12-17; column 2, lines 28-32). Furthermore, Hall fails to cure the deficiencies of Townsend.

While Hall discloses the use of cementitious materials, Hall nowhere discloses or suggests vertically overlaying one cementitious material only on another cementitious material. Hall discloses that a first load bearing material is filled at or near the center of the mine support to form a single, consistent central pillar while a second material, with a low load-bearing capacity, is filled around the central pillar (see, e.g., Hall, column 6 lines 15-21; column 6, lines 62-67). Despite the Office Action's assertions with regard to FIG. 3 of Hall, FIG. 3 does not show that one aerated cementitious material only overlies another aerated cementitious material with different strength characteristics. As illustrated in FIG. 3 of Hall, the compartments increase in cross-sectional size from the upper end of the support to the lower end of the support. It is therefore not possible for one compartment to be fully aligned with a higher or lower compartment in the sense that, at the interface, the material of one compartment does not "overlay" the material of the other compartment. Thus, even if some small portion of the material around the central pillar described above is by chance above some small portion of the material in the central pillar, the material around the central pillar does not only overlie the material in the central pillar.

Further, with respect to overlaying one cementitious material with another, the Office Action cites the Abstract, column 3, lines 10-20 and column 4 lines 1-20. It appears that Hall here discloses the use of one cementitious material only. Generally, the second material either has no load bearing capability or consists of a back fill or mine slimes or tailings. This approach is borne out by the specific example described at column 5, lines 20-35 of Hall. Moreover, there are no claims directed to the use of one cementitious material over another and one can deduce from this that Hall did not envisage this particular combination as being of benefit. As such, Hall does not disclose or render obvious the feature of overlaying one cementitious material with another.

Accordingly, claim 16 is patentable over Townsend and/or Hall at least because the references do not disclose or render obvious a mine support in which one aerated cementitious material only overlies another aerated cementitious material with different strength characteristics.

In addition, claims 2, 4, 5, 8, 11, 13, 14 are patentable over the cited references due at least to their dependencies on claim 16. Furthermore, with respect to the remaining claims, the Examiner has stated that each modification results in a yield with a "predictable deformation." The Applicants respectfully disagree, as the teachings of Hall do not produce predictable deformation. Secondly, Townsend makes use of timber and, inherently, the qualities of the timber are such that "predictable deformation" is not achievable. Thirdly, the deformation characteristic in Townsend is affected by the double wall section formed by overlapping tubes. In contrast, in exemplary embodiments of the present invention, a single sleeve is employed, which clearly has predictable characteristics. Further, the cementitious materials are typically produced under factory conditions and, again, have predictable characteristics. Accordingly, the assertions that Townsend and Hall form the basis for developing a support with "predictable deformation" is not substantiated.

In view of the foregoing, Applicant respectfully requests that the rejections of the claims set forth in the Office Action of June 8, 2009 be withdrawn, that pending claims 2, 4, 5, 8, 11, 13, 14 and 16 be allowed, and that the case proceed to early issuance of Letters Patent in due course.

It is believed that no additional fees or charges are currently due. However, in the event that any additional fees or charges are required at this time in connection with the application, they may be charged to applicant's representatives Deposit Account No. 50-1433.

Respectfully submitted,

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